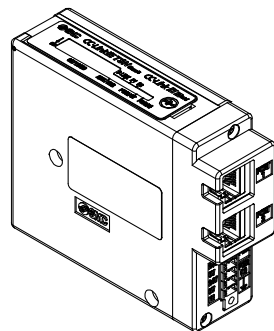




ORIGINAL INSTRUCTIONS

Instruction Manual

Fieldbus device - SI unit for CC-Link IE TSN and CC-Link IE Field communication EX260-SCT1


The intended use of the SI unit is for the control of pneumatic valves and I/O while connected to the CC-Link IE communication network.

1 Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Danger," "Warning" or "Caution." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)^{*)}, and other safety regulations.

^{*)}ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components.

ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components.

IEC 60204-1: Safety of machinery - Electrical equipment of machines. Part 1: General requirements.

ISO 10218-1: Robotics - Safety requirements - Part 1: Industrial robots.

- Refer to the product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

	Danger	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
	Warning	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	Caution	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Warning

- Always ensure compliance with relevant safety laws and standards.**
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.

Caution

- Provide grounding to assure the safety and noise resistance of the Fieldbus system.**
Individual grounding should be provided close to the product using a short cable.
- Refer to the operation manual on the SMC website (URL: <https://www.smcworld.com>) for further Safety Instructions.

2 Specifications
2.1 General specifications

Item	Specifications
Ambient temperature	-10 to +50 °C
Ambient storage temperature	-20 to +60 °C
Ambient humidity	35 to 85% RH (no condensation)
Enclosure protection rating	IP40 (IEC 60529)
Withstand voltage	500 VAC applied for 1 minute (between FE and terminals)
Insulation resistance	500 VDC, 10 MΩ or more (between FE and terminals)
Vibration resistance (according to EN60068-2-6)	10 to 57 Hz (constant amplitude) 0.75 mm p-p, 57 Hz to 150 Hz (constant acceleration) 49 m/s ² 2 hours each direction X, Y and Z.
Impact resistance (according to EN60068-2-27)	147 m/s ² , 3 times in each direction X, Y and Z
Standards	UL, CE/UKCA
Weight	200 g or less
Dimensions (W x L x H) mm	28.2 x 98.1 x 76.5

2.2 Electrical specifications

Item	Specifications	
For Logic (PWR)	Operating voltage	24 VDC +20% / -15%
	Internal current consumption	100 mA or less
For Output (PWR(V)) ^{*1}	Operating voltage	24 VDC +20% / -15%
	Under voltage detection	19 VDC approx.
Protection against reverse polarity	Yes (PWR and PWR(V))	
Galvanic isolation	Yes (between PWR and PWR(V))	

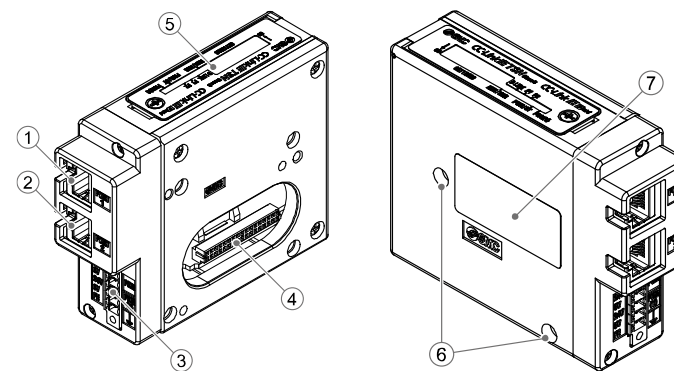
^{*1}: This is the power supply voltage for the SI unit. Refer to the operation manual for the solenoid valve for further specifications.

2.3 Solenoid valve specifications

Item	Specifications	
Applicable valve series	SY3000, 5000, 7000 JSY1000, 3000, 5000 VQC1000, 2000, 4000, 5000	
Valve (Output)	Maximum output points	32
	Load	Solenoid valve with surge voltage suppressor of 24 VDC, 0.95 W or less (SMC)
	Output type	PNP (Negative common) Source
	Short circuit detection / protection	Yes

2.4 Communication specifications

Item	Specifications	
Bus protocol	CC-Link IE TSN	CC-Link IE Field
Station type	Remote station	
CC-Link IE TSN Class	CLASS B	-
Communication medium	Standard ethernet cable: CAT5e or more	
Communication speed	1 Gbps / 100 Mbps	1 Gbps
Compatible topology	Star, Line, Ring	
Fast Link-UP function	-	
Configuration file	CC-Link IE TSN	0x0123_EX260-SCT1_*_ja.cspp 0x0123_EX260-SCT1_*_en.cspp
	CC-Link IE Field	0x0123_EX260-SCT1_*_ja_(CCIEF).cspp 0x0123_EX260-SCT1_*_en_(CCIEF).cspp

3 Name and function of parts


No	Part	Description
1	Fieldbus connector (PORT 1)	CC-Link IE TSN / Field connection port 1 (RJ45 connector).
2	Fieldbus connector (PORT 2)	CC-Link IE TSN / Field connection port 2 (RJ45 connector).
3	Power connector (PWR, PWR(V))	Power supply connection for Logic and Valves.
4	Manifold connector	For connection to valve manifold.
5	LED display	LED display to indicate the SI unit status.
6	Mounting holes	For mounting on to valve manifold.
7	Product information label	Label to indicate the SI Unit information, such as MAC address, serial number etc.

Accessories

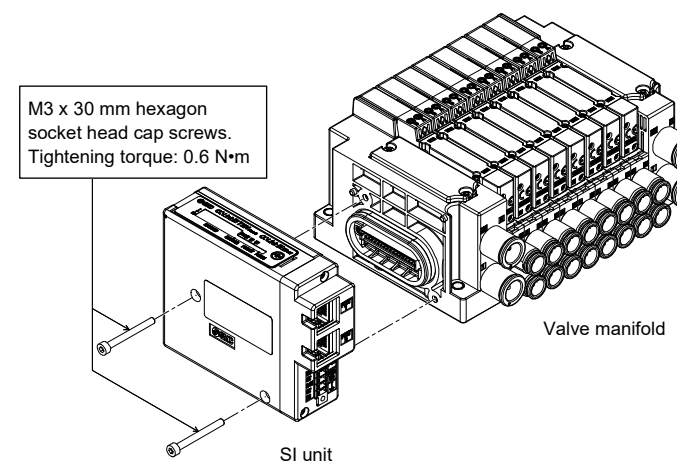
No	Item	Description
1	Hex. socket head cap screw	M3 x 30 screw (2 pcs.) for connection to valve manifold.
2	Power supply connector	Power supply for logic and valves.
3	Dust cover for RJ45 connector	Dust cover (EX9-AWR).

4 Installation
4.1 Installation
Warning

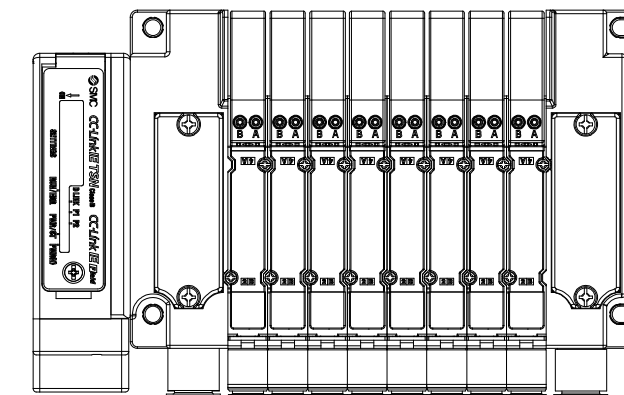
- Do not install the product unless the safety instructions have been read and understood.
- Assemble the SI unit to the valve manifold using the 2 hexagon socket head screws supplied (Hexagonal socket wrench size: 2.5 mm).
- Tighten the screws while holding the SI unit and the valve manifold so that there is no gap between them.
- Tighten the screws to the recommended tightening torque: 0.6 N·m.
- Install the valve manifold before turning on the power to the SI unit.

4.2 Assembly Precautions

- Be sure to turn OFF the power.
- Check there is no foreign matter inside the SI unit.
- Check there is no damage and no foreign matter stuck to the gasket.


4 Installation (continued)
4.3 Valve manifold installation

- The SI unit does not have mounting holes for installation. For installation, refer to the instruction manual or catalog for the valve manifold to be used.


4.4 Environment
Warning

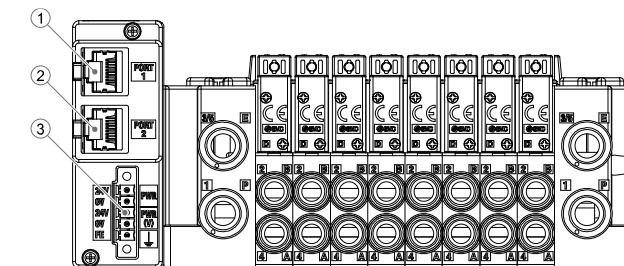
- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in a place where the product could be splashed by oil or chemicals.
- Do not use in an area where electrical surges are generated.
- Use with caution at an altitude above 2000 m, as the reduction in atmospheric pressure reduces the withstand voltage performance and noise immunity (lightning surge, electro-static discharge).
- When a surge-generating load such as a relay or solenoid is driven directly, use a fieldbus system with a built-in surge-absorbing element.
- Prevent foreign matter such as remnant of wires from entering the fieldbus system to avoid failure or malfunction.
- Do not install in a location subject to vibration or impact.

- Do not use in an environment exposed to temperature cycles.
- Do not expose the product to direct sunlight or UV light.
- Do not operate close to a heat source, or in a location exposed to radiant heat.

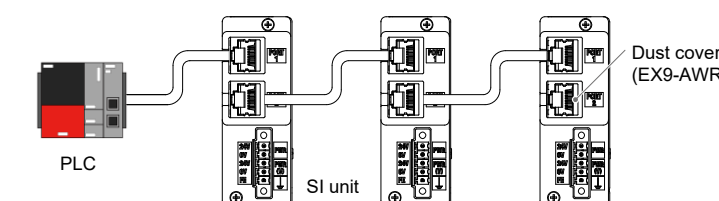
5 Wiring

- Connect the communication cables, power cable, and functional earth (FE) cable.

- CC-Link IE TSN / Field communication connector port 1
- CC-Link IE TSN / Field communication connector port 2
- Power / Functional Earth (FE) connector

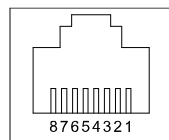

5.1 Communication Connector

- Select cables to mate with the RJ45 connectors on the SI unit. Use only connectors conforming to FCC standards.
- Shielded Ethernet cable is recommended.



5 Wiring (continued)

5.1.1 Connector pin layout



RJ45 connector (PORT 1/2)

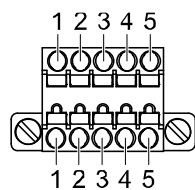
Pin No.	PORT 1 / PORT 2	
	Signal	Content
1	BI_DA+	Transmit / Receive Data A+
2	BI_DA-	Transmit / Receive Data A-
3	BI_DB+	Transmit / Receive Data B+
4	BI_DC+	Transmit / Receive Data C+
5	BI_DC-	Transmit / Receive Data C-
6	BI_DB-	Transmit / Receive Data B-
7	BI_DD+	Transmit / Receive Data D+
8	BI_DD-	Transmit / Receive Data D-

Caution

- Be sure to fit a dust cover (SMC part number EX9-AWR) on any unused RJ45 communication connector. Proper use of the dust cover enables the enclosure to maintain IP40 specification.
- One dust cover is supplied with the product.

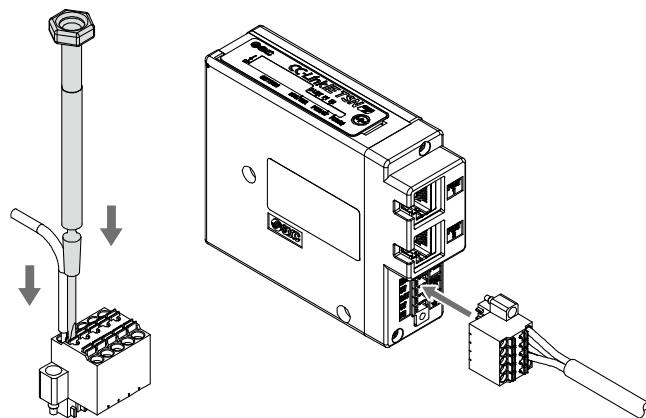
5.2 Power supply connector

- The power supply connector (SMC part number EX9-CP12) included as an accessory, can be used to supply power to the SI unit.



Pin No.	Signal	Content
1	FE	Function Earth
2	0 V (PWR(V))	0 VDC for Output
3	24 V (PWR(V))	24 VDC for Output
4	0 V (PWR)	0 VDC for Control
5	24 V (PWR)	24 VDC for Control

- The power supply for control (PWR) and the power supply for output (PWR(V)) are isolated. Be sure to supply power respectively. Either single source power supply or two different power supplies can be used.
- Applicable wire for the power supply connector is AWG24 to AWG16 (0.2 to 1.5 mm²).
- Tighten the connector flange with a tightening torque of 0.2 to 0.3 N·m.



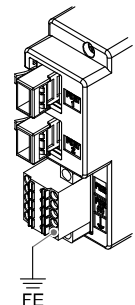
Caution

- The power supply for control (PWR) and the power supply for output (PWR(V)) should be protected with an external fuse.

5 Wiring (continued)

5.3 Ground Terminal

- The SI Unit must be connected to FE (Functional Earth) to divert electromagnetic interference.
- Connect a grounding cable from the FE terminal on the SI Unit to the nearest functional earth point.
- The grounding cable should be as thick and short as possible.
- Resistance to ground should be 100 ohms or less.



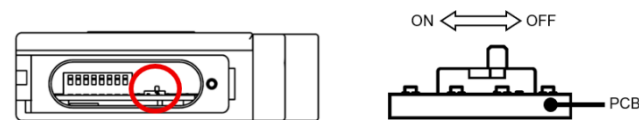
6 Setting

6.1 Switch setting

- Switch settings must be made with the power supply turned OFF.
- Switch settings will be set once power is applied and any changes after power is applied will be ignored.
- Open the cover and set the switches using a small precision screwdriver or similar.

6.2 Network setting

- To operate the SI unit in CC-Link IE TSN communication mode, set the network setting switch to OFF.
- To operate the SI unit in CC-Link IE Field communication mode, set the network setting switch to ON.
- The factory setting is CC-Link IE TSN communication mode.

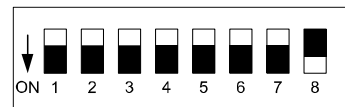


When using the CC-Link IE TSN communication mode, refer to the "CC-Link IE TSN communication mode" section in the Operation Manual. When using the CC-Link IE Field communication mode, refer to the "CC-Link IE Field communication Mode" section in the Operation Manual.

Setting	Communication mode
OFF	CC-Link IE TSN Communication Mode (default setting)
ON	CC-Link IE Field Communication Mode

6.3 IP Address setting (for CC-Link IE TSN network)

- Set the fourth octet of the IP address using the IP address switch.
- The first to third octets of the IP address will be automatically set to the same value as the master station when communicating with it.
- When 0 is set, the IP address saved to memory is used for operation.
- The IP address 192.168.3.250 is set as the default.
- When 255 is set, the IP address setting "out of range" error occurs.

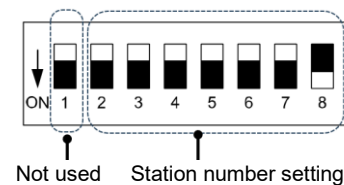


Switch No.	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8
IP Address	128	64	32	16	8	4	2	1
	1	OFF	OFF	OFF	OFF	OFF	OFF	ON
	2	OFF	OFF	OFF	OFF	OFF	OFF	ON
	3	OFF	OFF	OFF	OFF	OFF	OFF	ON
	4	OFF	OFF	OFF	OFF	OFF	ON	OFF
	:	:	:	:	:	:	:	:
	254	ON	ON	ON	ON	ON	ON	OFF

6 Setting (continued)

6.4 Station number setting (for CC-Link IE Field network)

- Use the station number setting switches No.2 to No.8 to set the station number.
- Station numbers can be set in the range from 1 to 120.
- When 0 is set, the station number saved to memory is used for operation.
- Station number 1 is set to as the default.
- When the station number setting is set to a value between 121 and 127, the station number setting switch "out of range" error occurs.



Switch No.	No.2	No.3	No.4	No.5	No.6	No.7	No.8
Station number	64	32	16	8	4	2	1
	1	OFF	OFF	OFF	OFF	OFF	ON
	2	OFF	OFF	OFF	OFF	OFF	ON
	3	OFF	OFF	OFF	OFF	OFF	ON
	:	:	:	:	:	:	:
	118	ON	ON	ON	OFF	ON	ON
	119	ON	ON	ON	OFF	ON	ON
	120	ON	ON	ON	ON	OFF	OFF

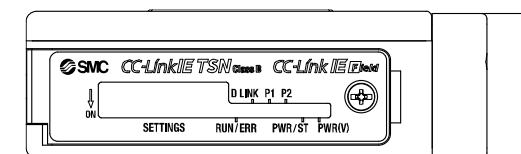
6.5 SI unit parameter setting

- The parameters of the SI unit can be set using the engineering tool by registering the CPS+ file in GX Works.
- Set the SI unit parameters in the "CC-Link IE TSN configuration" or the "CC-Link IE Field configuration" window of the engineering tool.
- Refer to the operation manual on the SMC website for further details (URL: <https://www.smcworld.com>).

6.6 Configuration

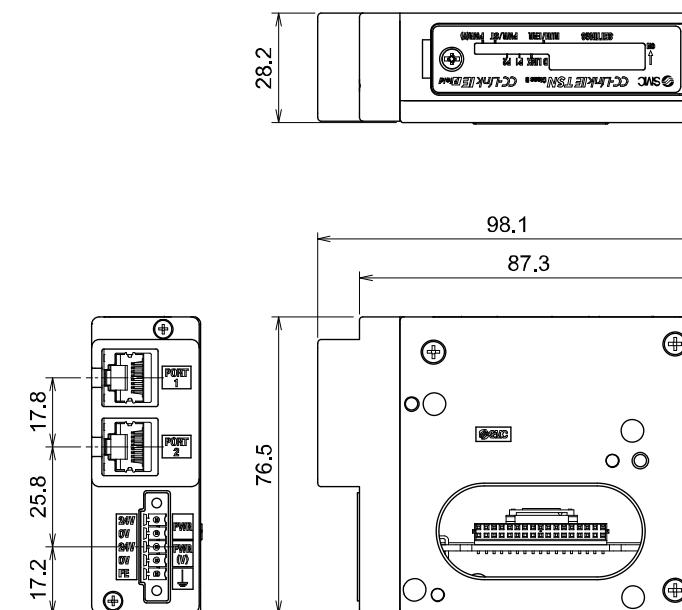
- The compatible CSP+ file is required to configure the SI Unit within a CC-Link IE TSN / Field communication network. Download the latest CSP+ files from the SMC website. URL: <https://www.smcworld.com>.
- The CSP+ files for CC-Link IE TSN network are as follows:
CSP+ file (Japanese): 0x0123_EX260-SCT1*_ja.cssp
CSP+ file (English): 0x0123_EX260-SCT1*_en.cssp
- The CSP+ files for CC-Link IE Field network are as follows:
CSP+ file (Japanese): 0x0123_EX260-SCT1*_ja_(CCIEF).cssp
CSP+ file (English): 0x0123_EX260-SCT1*_en_(CCIEF).cssp
- For how to install the CSP+ file, refer to the configuration software manual available on the SMC website. (URL: <https://www.smcworld.com>).

7 LED Display



LED	Status	Description
RUN	Green ON	Operating normally.
	OFF	A major error has occurred.
ERR	OFF	Operating normally.
	Red flashing	A minor error has occurred.
D LINK	Red ON	A moderate or major error has occurred.
	Green ON	Cyclic transmission being performed.
	Green flashing	Cyclic transmission stopped.
P1	OFF	Disconnected.
	Green ON	Link-up (PORT 1).
P2	OFF	Link-down in progress (PORT 1).
	Green ON	Link-up (PORT 2).
PWR	OFF	Link-down in progress (PORT 2).
	Green ON	Power supply for control (PWR) is present.
ST	OFF	Power supply for control (PWR) is low.
	OFF	Operating normally.
PWR(V)	Red ON	Valve has a short circuit, or count overflow. Delay time setting error (when network synchronization is enabled).
	Green ON	Power supply for output (PWR(V)) is present.
PWR(V)	OFF	Power supply for output (PWR(V)) is low (< approx. 19 VDC) or is not present.

8 Outline Dimensions (mm)



9 How to Order

Refer to the operation manual or catalogue on the SMC website (URL: <https://www.smcworld.com>) for How to order information.

10 Maintenance

10.1 General Maintenance

Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous.
- Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.
- Do not use solvents such as benzene, thinners, etc. to clean the product.
- Stop operation if the product does not function correctly.

11 Limitations of Use

11.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

12 Product Disposal

This product shall not be disposed of as municipal waste. Check your local regulations and guidelines to dispose of this product correctly, in order to reduce the impact on human health and the environment.

13 Contacts

Refer to www.smcworld.com or www.smc.eu for your local distributor / importer.

SMC Corporation

URL: <https://www.smcworld.com> (Global) <https://www.smc.eu> (Europe)
SMC Corporation, 1-5-5, Kyobashi, Chuo-ku, Tokyo 104-0031, JAPAN
Specifications are subject to change without prior notice from the manufacturer.
© SMC Corporation All Rights Reserved.
Template DKP50047-F-0850